

Claims

1. A pharmaceutical composition comprising a nucleic acid molecule encoding DG931 protein and / or a functional fragment thereof and an effector / modulator of said nucleic acid molecule and / or said protein or protein fragment.
2. The composition of claim 1, wherein the composition contains pharmaceutically acceptable carriers, diluents, and / or additives.
3. The composition of claim 1 or 2, wherein the nucleic acid molecule is a mammalian DG931 nucleic acid, particularly encoding the human DG931 polypeptide and/or a nucleic molecule which is complementary thereto or a fragment thereof or a variant thereof.
4. The composition of any one of claims 1-3, wherein said nucleic acid molecule is selected from the group consisting of
 - (a) a nucleic acid molecule encoding a polypeptide as shown in SEQ ID NO: 2, or an isoform, fragment or variant of the polypeptide as shown in SEQ ID NO: 2;
 - (b) a nucleic acid molecule which comprises or is the nucleic acid molecule as shown in SEQ ID NO: 1;
 - (c) a nucleic acid molecule being degenerate with as a result of the genetic code to the nucleic acid sequences as defined in (a) or (b),
 - (d) a nucleic acid molecule that hybridizes at 50°C in a solution containing 1 x SSC and 0.1% SDS to a nucleic acid molecule as defined in claim 2 or as defined in (a) to (c) and/or a nucleic acid molecule which is complementary thereto;
 - (e) a nucleic acid molecule that encodes a polypeptide which is at least 85%, preferably at least 90%, more preferably at least 95%, more preferably at least 98% and up to 99,6% identical to the human DG931, as defined in claim 2 or to a polypeptide as defined in (a);
 - (f) a nucleic acid molecule that differs from the nucleic acid molecule of (a) to (e) by mutation and wherein said mutation causes an alteration, deletion, duplication or premature stop in the encoded polypeptide.
5. The composition of any one of claims 1-4, wherein the nucleic acid molecule is a DNA

- molecule, particularly a cDNA or a genomic DNA.
6. The composition of any one of claims 1-5, wherein said nucleic acid encodes a polypeptide contributing to regulating the metabolism, in particular human metabolism.
 7. The composition of any one of claims 1-6, wherein said nucleic acid molecule is a recombinant nucleic acid molecule.
 8. The composition of any one of claims 1-7, wherein the nucleic acid molecule is a vector, particularly an expression vector.
 9. The composition of any one of claims 1-4, wherein the polypeptide is a recombinant polypeptide.
 10. The composition of claim 9, wherein said recombinant polypeptide is a fusion polypeptide.
 11. The composition of any one of claims 1-8, wherein said nucleic acid molecule is selected from hybridization probes, primers and anti-sense oligonucleotides.
 12. The composition of any one of claims 1-11 which is a diagnostic composition.
 13. The composition of any one of claims 1-11 which is a therapeutic composition.
 14. The composition of any one of claims 1-13 for the manufacture of an agent for detecting and/or verifying, for the treatment, alleviation and/or prevention of metabolic diseases or dysfunctions, including diabetes, obesity, and/or metabolic syndrome.
 15. Use of a DG931 nucleic acid molecule or a polypeptide encoded thereby or a fragment or a variant of said nucleic acid molecule or said polypeptide and / or an effector / modulator of said nucleic acid or polypeptide for the manufacture of a medicament for the treatment of diabetes, obesity, and/or metabolic syndrome and/or for controlling the function of a gene and/or a gene product which is influenced and/or modified by a DG931 polypeptide.

16. Use of the DG931 nucleic acid molecule or use of a nucleic acid molecule encoding DG931 or a homologue thereof or use of a polypeptide encoded thereby, or use of a fragment or a variant of said nucleic acid molecule or said polypeptide, or use of an effector / modulator of said nucleic acid molecule or said polypeptide for identifying substances in vitro capable of interacting with a DG931 polypeptide.
17. A non-human transgenic animal exhibiting a modified expression of a DG931 polypeptide.
18. The animal of claim 17, wherein the expression of the DG931 polypeptide is increased or reduced.
19. A recombinant host cell exhibiting a modified expression of a DG931 polypeptide, or a recombinant host cell which comprises a nucleic acid molecule as defined in any one of claims 1 to 8 or 11.
20. The cell of claim 19 which is a human cell.
21. A method of identifying a (poly)peptide involved in the regulation of energy homeostasis and/or metabolism in a mammal comprising the steps of
 - (a) contacting a collection of (poly)peptides with a DG931 homologous polypeptide or a fragment thereof under conditions that allow binding of said (poly)peptides;
 - (b) removing (poly)peptides which do not bind and
 - (c) identifying (poly)peptides that bind to said DG931 homologous polypeptide.
22. A method of screening for an agent which effects / modulates the interaction of a DG931 polypeptide with a binding target comprising the steps of
 - (a) incubating a mixture comprising
 - (aa) a DG931 polypeptide or a fragment thereof;
 - (ab) a binding target/agent of said DG931 polypeptide or fragment thereof; and
 - (ac) a candidate agent under conditions whereby said polypeptide or fragment thereof specifically binds to said binding target at a reference affinity;

- (b) detecting the binding affinity of said DG931 polypeptide or fragment thereof to said binding target to determine an affinity for the agent; and
 - (c) determining a difference between affinity for the agent and reference affinity.
- 23. A method for screening for an agent, which modulates the activity of a DG931 polypeptide, comprising the steps of
 - (a) incubating a mixture comprising
 - (aa) a DG931 polypeptide or a fragment thereof; and
 - (ab) a candidate agentunder conditions whereby said DG931 polypeptide or fragment thereof exhibits a reference activity,
 - (b) detecting the activity of said DG931 polypeptide or fragment thereof to determine a activity for the agent; and
 - (c) determining a difference between activity for the agent and reference activity.
- 24. A method of producing a composition comprising the (poly)peptide identified by the method of claim 21 or the agent identified by the method of claim 22 or 23 with a pharmaceutically acceptable carrier and/or diluent.
- 25. The method of claim 24 wherein said composition is a pharmaceutical composition for preventing, alleviating or treating of metabolic diseases and disorders, including diabetes, obesity, and/or metabolic syndrome.
- 26. Use of a (poly)peptide as identified by the method of claim 21 or of an agent as identified by the method of claim 22 or 23 for the preparation of a pharmaceutical composition for the treatment, alleviation and/or prevention of metabolic diseases or dysfunctions, including diabetes, obesity, and/or metabolic syndrome.
- 27. Use of a nucleic acid molecule as defined in any one of claims 1 to 8 or 11 for the preparation of a medicament for the treatment, alleviation and/or prevention of metabolic diseases or dysfunctions, including diabetes, obesity, and/or metabolic syndrome.
- 28. Use of a polypeptide as defined in any one of claims 1 to 6, 9 or 10 for the preparation of a medicament for the treatment, alleviation and/or prevention of metabolic diseases or

dysfunctions, including diabetes, obesity, and/or metabolic syndrome.

29. Use of a vector as defined in claim 8 or the preparation of a medicament for the treatment, alleviation and/or prevention of metabolic diseases or dysfunctions, including diabetes, obesity, and/or metabolic syndrome.
30. Use of a host cell as defined in claim 19 or 20 for the preparation of a medicament for the treatment, alleviation and/or prevention of metabolic diseases or dysfunctions, including diabetes, obesity, and/or metabolic syndrome.
31. Use of a DG931 nucleic acid molecule or of a fragment thereof for the production of a non-human transgenic animal which over- or under-expresses the DG931 gene product.
32. Kit comprising at least one of
 - (a) a DG931 nucleic acid molecule or a functional fragment or an isoform thereof;
 - (b) a DG931 amino acid molecule or a functional fragment or an isoform thereof;
 - (c) a vector comprising the nucleic acid of (a);
 - (d) a host cell comprising the nucleic acid of (a) or the vector of (b);
 - (e) a polypeptide encoded by the nucleic acid of (a), expressed by the vector of (c) or the host cell of (a);
 - (f) a fusion polypeptide encoded by the nucleic acid of (a);
 - (g) an antibody, an aptamer or another effector / modulator of the nucleic acid of (a) or the polypeptide of (b), (e), or (f) and /or
 - (h) an anti-sense oligonucleotide of the nucleic acid of (a).